APPARATUS FOR RECEIVING AND DECODING A BROADCAST SIGNAL

BACKGROUND OF THE INVENTION

The present invention relates to a data broadcast receiving apparatus for receiving television broadcast having data broadcast signal such as teletext signal superposed on television broadcast signal, and more particularly to a system combined with other transmission line such as telephone circuit.

Generally, the data broadcast receiving apparatus comprises a data broadcast decoder unit for decoding the data broadcast signal superposed on television broadcast, a display unit for displaying video signal of television broadcast or data broadcast, and a modem connected to a telephone circuit.

FIG. **1** is a block diagram showing a schematic configuration of data broadcast system with interactive function.

In FIG. **1**, reference numeral **1** denotes a television broadcast station, **2** is a data broadcast receiving apparatus serving also as television receiver comprising a data broadcast decoder **2***a* and a modem **2***b*, and **3** is a response server connected to the data broadcast receiving apparatus **2** through a telephone circuit **4** and also connected to the television broadcast station **1** through a telephone circuit **5**.

At the television broadcast station **1**, main information such as character and graphic data, and auxiliary information such as program for adding interactive property and related information are coded according to a predetermined standard, converted into data signals, combined with synchronizing code, error correction code, and others, and prepared as data broadcast signal assigned in data packet, and it is superposed in the vertical blanking period (VBL) of video signal, same as in the case of teletext, and converted into radio wave and broadcast.

In the data broadcast receiving apparatus **2**, the data broadcast signal is decoded in the data broadcast decoder **2***a*, stored, displayed, and interpreted as required, and executed according to the specified process. In the case the content of television broadcast is television shopping or data survey, the telephone number or facsimile number of the supplier or destination is contained as television broadcast signal, and it is stored in the memory.

By the input means in the data broadcast receiving apparatus **2**, the merchandise name, quantity of purchase, name of purchaser, address, and response data of survey are added and stored in the memory.

By automatic dialing, the necessary data is transmitted to the response server **3** through modem **2***b*and telephone circuit **4**.

The response server **3** collects orders and replies from individual homes, and processes the data according to the prepared instruction from the television broadcast station **1**, information provider or service firm, and the result of processing is transmitted to the television broadcast station **1**, information provider or service firm. In this way, interactive (two-way) data is transmitted and received.

This system, however, involves several problems.

First, in the case of online service connection with the response server, it is required to do in a short time while the corresponding telephone number is superposed on the data broadcast signal by television broadcast. It was hence impossible to connect to the online service at an arbitrary time desired by the user.

Second, in the event of online service with the response server, the telephone number of online service is accompanied by valid term. For example, in online shopping, the order closing time may be determined for every sales company or every merchandise. In such a case, adequate control of online service telephone number with valid term seems useful technique.

Third, recently, the number of channels tends to increase, especially in satellite broadcasting, from dozens to more than a hundred. At the same time, various services may be provided from the response servers. In such increasing trend in the number of channels and variety of services, it is very hard for the user of the television receiver to search desired program or information by own operation. Or, it may fail to search by specific time or in a specific duration. It is more and more difficult as the number of channels increases or the number of programs increases to view the desired television broadcast program or data broadcast program at due timing according to the user's own request, such as a drama or news program played or hosted by a specific personality, sports program or news of a specific team, television shopping, special event program, and specific local weather forecast. A similar difficulty may be considered to obtain user's desired stock or other information from the response server through modem and telephone circuit.

Fourth, in the case of television shopping or online survey while washing the television, the lines are occupied and busy right after start of acceptance, and one must wait for a long time until the line is connected. In such a case, it seems useful technique to determine the sequence of line connection timing by some way or other.

Fifth, when data broadcast signal is superposed on television broadcast, various information can be transmitted inexpensively over a very wide area (coverage). Wide coverage means freedom from regional prejudice in the content of information. In other words, it is a demerit for distributing individual information in each district. One of the causes is that the coverage area of broadcast wave is generally different from the area of each district. The coverage area is far wider. When transmitting individual information in each district all by television broadcast, the quantity of information is enormous, and it takes a very long time. A user in a specific district, wishing to obtain the original information in the district, must wait for a long time until the information is distributed. If the information is obtained after long waiting, it is not guaranteed that the information is exactly as desired. In particular, the problem is serious in the event of emergency information. For example, if urgent evacuation of residents is requested in the event of earthquake or major disaster, if the escape destination and escape route in the district are sequentially distributed for all districts, it takes a very long time, and it is useless for emergency cases.

It is also requested that the individual information be obtained easily in each district. Not limited to regionality, concerning information about individual hobby or concern, same problems are present for obtaining the desired information easily.

SUMMARY OF THE INVENTION

It is hence an object of the invention to process the data broadcast signal, and two pieces of main information from other transmission line efficiently according to the purpose, in a data broadcast receiving apparatus used in a system combined with other transmission line such as telephone circuit, for receiving television broadcast having data broadcast signal such as teletext signal superposed on television broadcast signal.

To achieve the object, the invention comprises data broadcast decoding means for decoding data broadcast signal